

REMARKS

Claims 1, 7, 9, 10 and 12-14 are pending in this application.

No amendment has been made in this reply.

I. Claim Rejections – 35 U.S.C. §103

1. Claims 1, 7, 9, 10, and 12-14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0034656 A1.

In the previous Office actions (Paper Nos. 20050121 and 20051216), the examiner argued that the '656 publication discloses similar Ir based compound such as the compound having the formula of Fig. 16, and different ligands taught in Fig. 49, and that the differences between the prior art and the claims is in the position of phenyl ring with respect to the quinoline making it a positional isomer.

First, the examiner's analysis is not correct for the following reasons.

Unlike the examiner's analysis, the '656 publication discloses 8-phenyl isoquinoline, whereas the claim 1 includes 2-phenyl quinoline. Unlike the compound of Formula 1 of the instant application, the compound in the '656 publication is the isomer (i.e., isoquinoline) of quinoline as well as the isomer with respect to the phenyl position. The examiner did not consider the difference between isoquinoline and quinoline. This is not a mere change of a substituent position because the nitrogen is a constituent of a ring skeleton.

Since the examiner's rejection was based on an improper analysis, reconsider of the rejection is respectfully requested.

Second, isomerism by itself should not raise a prima facie case of obviousness. *Ex parte Mowry*, 91 USPQ 219, 221 (Bd. Pat. App. 1950). MPEP §2144.09 also recites this decision: “Isomers having the same empirical formula but different structures are not necessarily considered equivalent by chemists skilled in the art and therefore are not necessarily suggestive of each other. (claimed cyclohexylstyrene not prima facie obvious over prior art isohexylstyrene). The presumption of obviousness based on a reference disclosing structurally similar compounds may be overcome where there is evidence showing there is no reasonable expectation of similar properties in structurally similar compounds. *In re May*, 574 F.2d 1082, 197 USPQ 601 (CCPA 1978)

Here, the applicant pointed out that the examiner failed to establish a prima facie case of obviousness under *Ex parte Mowry*. In response to the applicant’s response, the examiner stated that the rejection is not based on isomerism alone but also the fact that it has the same properties.

However, the ‘656 publication does not disclose that the property of the compound having the aryl quinoline of Fig. 49. The ‘656 publication merely discloses the compounds may produce an emission at a wavelength between 400 nm and 700nm, which includes the blue, the green and the red regions. The ‘656 publication does not disclose how to select ligands to make a red luminescent compound. The properties shown in the ‘656 publication include the properties of the green luminescent compound as well as the red luminescent compound. Accordingly, the fact that the ‘656 publication compounds have different properties implies that there is no reasonable expectation of similar properties in structurally similar compounds.

Here, it cannot be reasonable to infer that they would share similar properties.

Also, there is no suggestion or motivation to modify the '656 publication.

Moreover, the applicant expressly stated that the compounds according to present invention has excellent luminescent efficiency and film stability, whereas it is expressly stated in the specification that the compounds disclosed in U.S. 2002/0121638A1 and U.S 2002/0034656 A1 still require improvements in luminescent efficiency and film stability. (See the specification on page 3, lines 7-12).

The reconsider of the rejection is respectfully requested.

2. With respect to claims 7, 9 and 10, the examiner failed to establish a prima facie case of obviousness for the following additional reasons.

In the instant application, the X group of Formula 1 is proline in claim 7, 2-quinoline carboxylate in claim 9, and 1-(2-hydrophenyl)pyrazolate in claim 10. These groups are not disclosed in the '656 publication. The examiner merely stated that "different X values are also taught in the US publication," but the groups in claims 7, 9 and 10 are not found in the '656 publication. The examiner did not sufficiently explain which ligands have similar structures to the structure of the ligands in claims 7, 9 and 10.

MPEP 707.07(f) states that:

"In order to provide a complete application file history and to enhance the clarity of the prosecution history record, an examiner must provide clear explanations of all actions taken by the examiner during prosecution of an application."

Since the PTO has the burden of showing by substantial evidence that an applicant is not entitled to a patent, the quoted statement is not sufficient; a decision on patentability must be

supported by substantial evidence, not merely by speculation. *In re Zurko*, 258 F.3d 1379, 1385-86 (Fed. Cir. 2001) (“With respect to core factual findings in a determination of patentability” PTO “must point to concrete evidence in the record” and it “cannot simply reach conclusions based on its own understanding or experience—or on its assessment of what would be basic knowledge or common sense”).

The applicant respectfully requests the examiner to provide a concrete reasoning for claims 7, 9 and 10. Also, the applicant respectfully requests the withdrawal of the finality of the action for the above reason.

It should be also noted that the presumption of obviousness based on a reference disclosing structurally similar compounds may be overcome where there is evidence showing there is no reasonable expectation of similar properties in structurally similar compounds. *In re May*, 574 F.2d 1082, 197 USPQ 601 (CCPA 1978)

Please note that Figure 49 of the ‘656 publication discloses a structure of amino acids, but proline is the only exception among 20 amino acids found in protein and a secondary amine. Proline contains an unusual ring to the N-end amine group, which forces the CO-NH amide sequence into a fixed conformation. Thus, Figure 49 of the ‘656 publication does not disclose the proline. Also, 2-quinoline carboxylate in claim 9 is neither taught nor suggested by the ‘656 publication. Also, the use of any pyrazolate is neither taught nor suggested by the ‘656 publication.

The selection of X is not predictable. The ‘656 publication expressly teaches that “the choice of X ligand affects both the energy of emission and efficiency,” (see para [0248]) that “the

wrong choice of X ligand can also severely quench the emission from L₂IrX complete” (see para [0250]). The ‘656 publication also discloses that even similar ligands such as hexafluoro-acac and diphenyl-acac complexes quench emission, but the reasons are not at all clear. (See the paragraph [0250]). Since the emission according to X is unpredictable and it cannot be reasonable to infer that they would share similar properties, the disclosed X ligands in the ‘656 publication does not render the compounds in claims 7, 9 and 10 obvious. (*In re May*, 574 F.2d 1082, 1094, 197 USPQ 601, 611 (CCPA 1978) (*prima facie* obviousness of claimed analgesic compound based on structurally similar prior art isomer was rebutted with evidence demonstrating that analgesia and addiction properties could not be reliably predicted on the basis of chemical structure); *In re Grabiak*, 769 F.2d 729, 731-32, 226 USPQ 870, 872 (Fed. Cir. 1985) (finding no *prima facie* obviousness where the prior art did not suggest appellant’s substitution of a thioester for an ester substituent on a carboxamide compound)).

II. Claim Rejections – 35 U.S.C. §112

Claim 1 and 12-14 stand rejected under 35 U.S.C. §112, first paragraph.

In the previous Office actions (Paper Nos. 20050121 and 20051216), the examiner argued that the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

As stated in our previous reply, the specification clearly includes Examples and the specific compounds. The specific compounds include the compounds represented by Formulae 2

through 7. Furthermore, Examples of substituted groups are expressly stated from para [0039] through [0047]. Synthesis examples are explained from para [0071] through [0092], and examples of using the compounds are explained from para [0093] through [0098].

The examiner additionally argued that “the art is highly unpredictable.” Please note that the examiner argued for obviousness rejection that it may be predicted that the structural similarity may make the compounds have the similar property, whereas the examiner argued that the change of the substituent is highly unpredictable. The applicant’s reasoning is improper.

The examiner additionally cited an example of caffeine and theophylline. It should be noted that the differences between caffeine and theophylline includes different position of oxygen as well as an additional methyl group. Also, R1-R10 are substituted with H which is bonded to a carbon atom. It is well known that the change by an addition or a substitution may bring a predictable result or an unpredictable according to the substituted or added position. It should be noted that while the methyl group in caffeine is added compared with theophylline, hydrogen atoms are substituted with R1-F10. More importantly, the substituents of R1-R10 are not attached to a radical, whereas a methyl group is attached to a radical (i.e., nitrogen atom) in caffeine. The examiner improperly generalizes from a totally different example wherein the methyl group is added to the radical (i.e., nitrogen) which has unpaired electrons. The substitution of H with a hydrocarbon group or halogen in a quinoline is regarded as a general derivative of quinoline in the art, and, like hydrogen, the listed groups of R1-R10 are a univalent radical. It requires a permissible amount of experimentation, it is merely routine, and how to practice a desired embodiment of the invention claimed is well within the ordinary skilled person’s knowledge

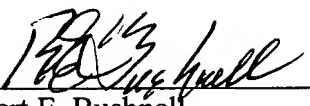
and/or the specification.

Withdrawal of the rejection is respectfully requested.

In view of the above, all claims are submitted to be allowable and this application is believed to be in condition to be passed to issue. Reconsideration of the rejections is requested. Should any questions remain unresolved, the Examiner is requested to telephone Applicant's attorney.

No fees are incurred by this Amendment.

Respectfully submitted,



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